

GB - 1930 - 04

Div. 52

# PATENT SPECIFICATION



Application Date: Jan. 30. 1929. No. 3183 / 29.

328,056

Complete Left: Sept. 27, 1929.

Complete Accepted: April 24, 1930.

## PROVISIONAL SPECIFICATION.

### Improvements in or relating to Tube Joints more particularly for use in Steam Superheaters.

I, MALCOLM MCPHAIL, Engineer, a subject of the King of Great Britain, of 1, Partridge Road, Cardiff, do hereby declare the nature of this invention to be as follows:—

This invention relates to tube joints more particularly for use in steam superheaters of the type comprising a plurality of tubes which are connected at their ends 10 to one or more headers.

According to the invention each end of each tube is formed or provided with an enlarged or flanged portion adapted to be pressed against packing material, preferably positioned in a recess formed in a wall of one of the headers so that a fluid tight seal is obtained, by means of a clamping element capable of longitudinal movement relatively to a fixed element 15 positioned externally of the tube, the said element contacting either directly with the said flanged portion or, preferably with an interposed distance piece or collar. The said distance piece or collar may consist of a metal ring, for example of copper, arranged concentrically with the tube so that the pressure applied by the said clamping elements is evenly distributed around the periphery of the flanged portion of the tube. The packing material 20 may be in the form of a copper or other suitable soft metal ring which is, as aforesaid, clamped between the walls of a header and a surface of the said flanged

portion, the latter being preferably of 35 part conical shape.

In the preferred construction, the clamping element is adapted simultaneously to apply the necessary joint sealing pressure to the flanged portions of two adjacent tubes and may consist of a rigid member having a hole therein so that it may be passed on to a stud or like fixed element secured to the walls of a header between two adjacent tubes. The two outer ends of the rigid member are preferably bifurcated so that each end may partially embrace one of the adjacent tubes and contact with the said flanged portion or with the distance piece or collar at substantially diametrical opposed points. 40

The clamping action is preferably obtained by forming the outer end of the stud or fixed member with threads so that a clamping nut, engaging therewith, may bear directly upon the upper surface of the rigid member or upon a spherical washer engaging a complementary spherical surface formed in the said clamping member. 45

Dated this 30th day of January, 1929,  
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## COMPLETE SPECIFICATION.

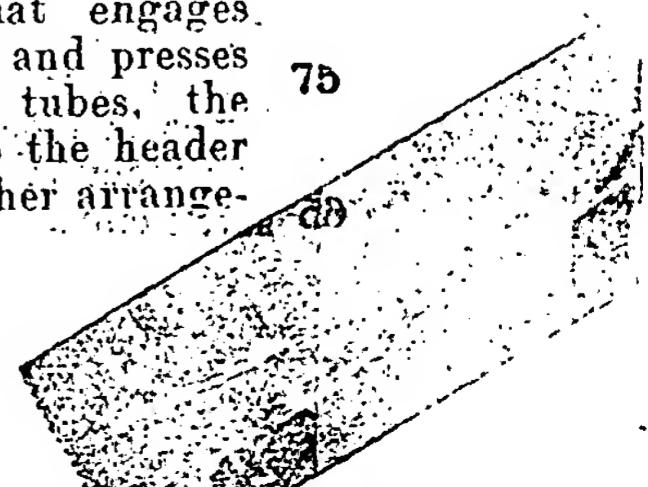
### Improvements in or relating to Tube Joints more particularly for use in Steam Superheaters.

I, MALCOLM MCPHAIL, Engineer, a subject of the King of Great Britain, of 1, Partridge Road, Cardiff, do hereby declare the nature of this invention and in what 65 manner the same is to be performed, to be particularly described and ascertained in and by the following statement.—

This invention relates to joints whereby the ends of tubes may be connected [Price 1/-]

to the wall of a header of a steam superheater, or to any other similar member.

It has previously been proposed to clamp two superheater tubes to a header by means of a bridge piece that engages collars surrounding the tubes and presses them against flanges on the tubes, the bridge piece being secured to the header by a clamping bolt. In another arrange-



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FIG.1

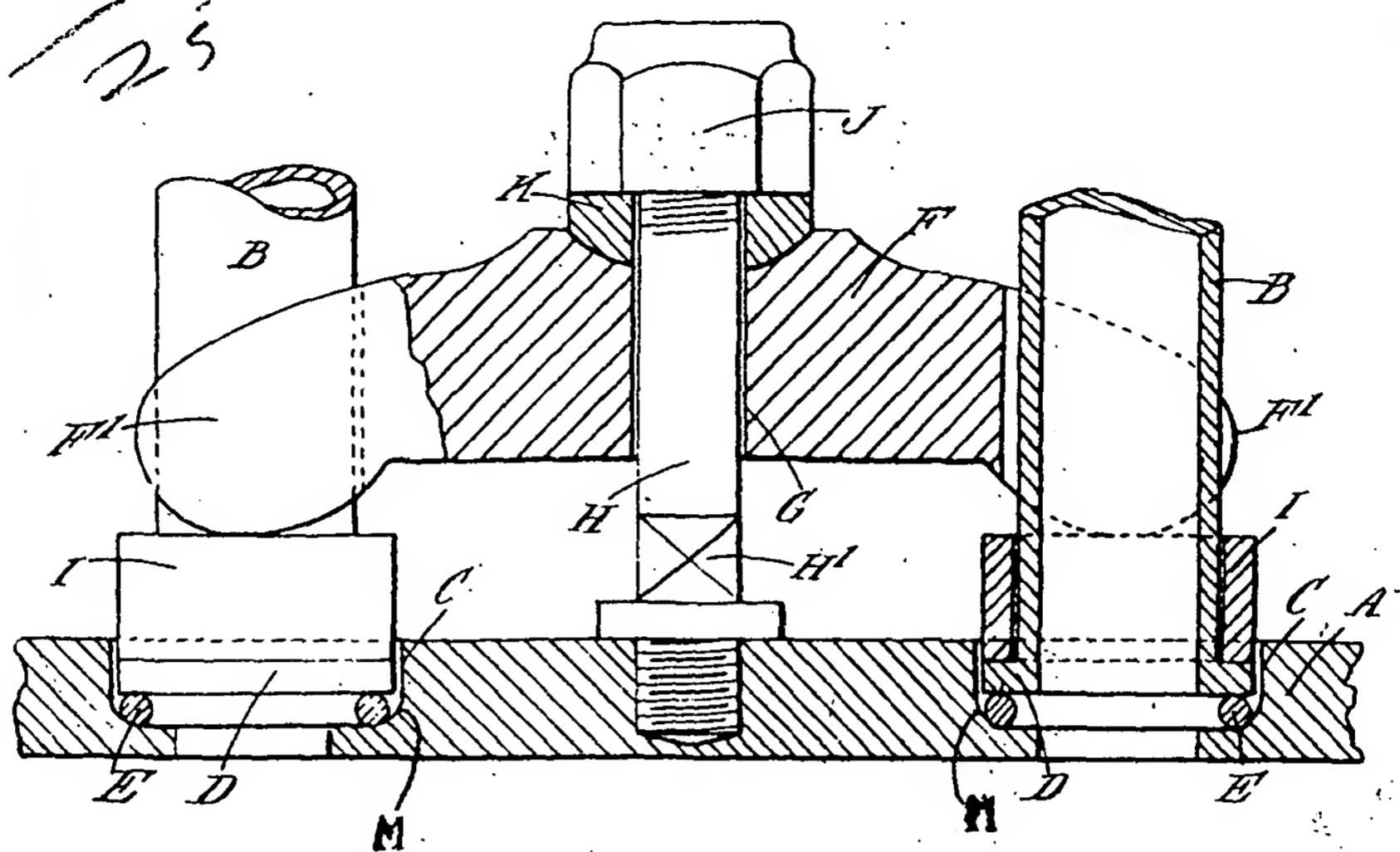


FIG.2

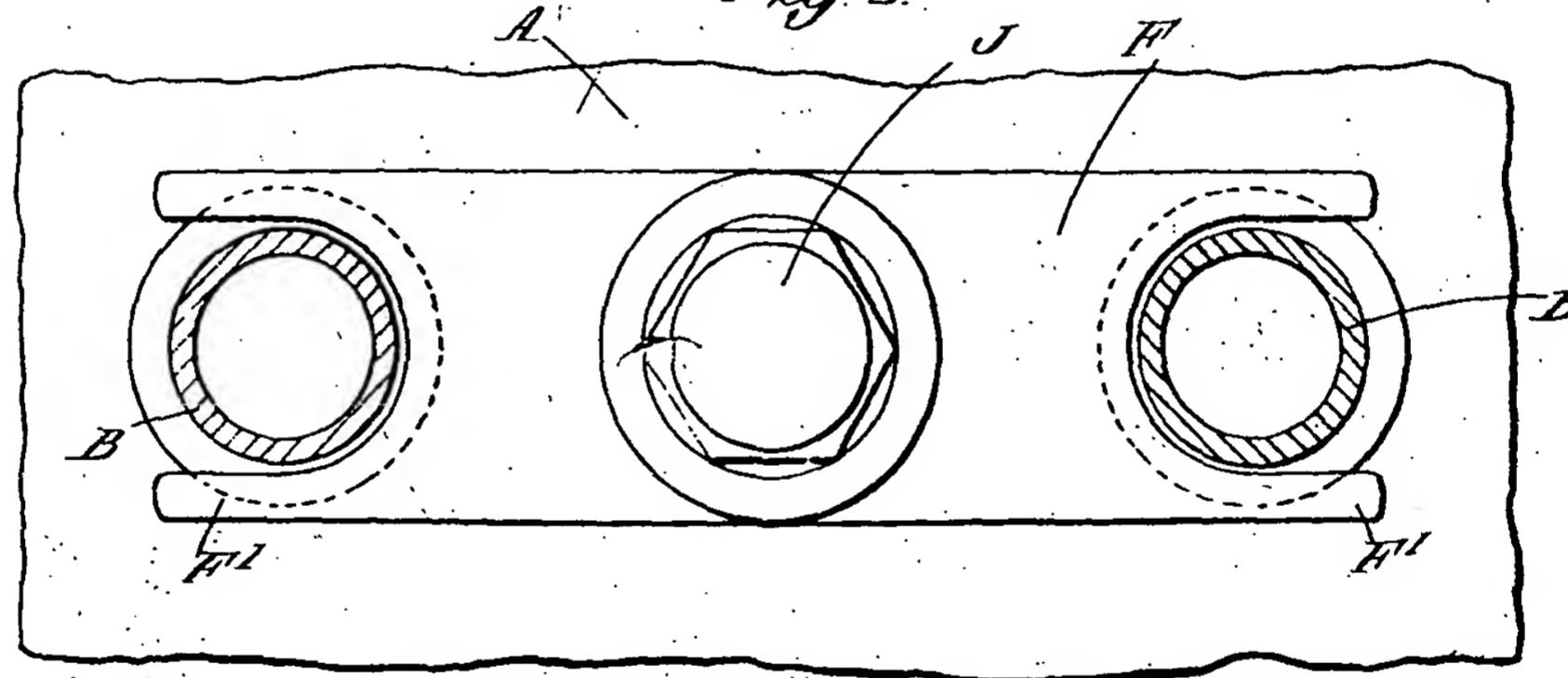


FIG.3

